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North American Early Tertiary Bryozoa. By FERDINAND CANU and RAY S. BASSLER. United States National Museum, Bull. No. 106, 1920. Pp. 878, pls. 162, figs. 279.

This monograph forms a pioneer work in the field of American bryozoölogy. Despite the great abundance and splendid preservation of bryozoa along the Atlantic and Gulf Coast regions, there has hitherto been so little done with them as to leave the field almost virgin.

Under the term Lower Tertiary the authors have included the Midwayan, Wilcoxian, Claibornian, Jacksonian, and Vicksburgian formations. There is found here a much richer bryozoan fauna than in the succeeding formations. A study of the Miocene, Pliocene, and Pleistocene bryozoans has been completed and it is hoped that it will soon appear as a monograph supplementing the present work. An extensive table showing the geographic and stratigraphic distribution of the different species is given.

Tertiary bryozoans are so intimately related to living forms that a thorough knowledge of the taxonomy and anatomy of living species is necessary for the proper classification and interpretation of the structures found. Accordingly the authors have produced a monograph which is of use both to the zoölogist and to the paleontologist. Numerous text figures are introduced to make the report of value to the non-specialist. A detailed discussion of the structure and classification of living forms is given.

With the exception of one undetermined species, referred to the order *Ctenostomata*, all Tertiary bryozoans belong either to the *Cheilostomata* or *Cyclostomata*, the latter being about half as numerous as the former. These are included in the subclass *Gymnolaemata*, which includes all fossil bryozoans, and is characterized by a circular row of tentacles surrounding the mouth. It is in turn incorporated in the class *Ectoprocta* which is distinguished by the presence of the anal orifice outside the row of tentacles.

The *Cheilostomata* which were probably derived through the Paleozoic *Trepostomata*, differ from the *Cyclostomata* in that they may be either calcareous or chitonous, and the aperture is closed, upon the retraction of the polypide, by an operculum. The *Ctenostomata* are chitonous or gelatinous forms with the aperture closed by a tooth-like process.

The studies of the authors have led them to discard for the present the former major classification of the *Cyclostomata*, retaining for convenience only the two larger divisions the *Ovicellata* and *Inovicellata*. In classifying the *Cheilostomata* orders were based upon general morphology, suborders on the form of aperture and operculum, and families on the presence of cardelles, lyrula, ovicells, and radicells.

With the increased recognition of the value of bryozoans as horizon-markers, the student will find this systematic report a reference of constant value.

A. C. McF.

Louisiana Lignite. By Robert Glenk. Department of Conservation, Division of Economic Geology, State of Louisiana, Bull. No. 8. New Orleans, 1921.

Although Louisiana lignite has been consistently mapped on all fuel maps of late years as a possible source of low-grade fuels, it has not until recently begun to receive the attention that it merits. The report here reviewed shows a gratifying interest by the state of Louisiana in its available resources—an interest that, since the days of Harris' and Veatch's work on the state survey, appeared to have flagged.

The lignite of Louisiana is of Eocene age and distributed vertically in the Wilcox, Claiborne, and Jackson groups. It varies in thickness from a few inches to twenty feet. Interesting paleobotanical collections have been made from it. In the adjacent states of Texas and Arkansas lignite is mined in considerable quantities by stripping the overburden, or by the room-and-pillar method where the dip of the lignite bed is appreciable; similar methods, though not yet used in Louisiana, might well be applied there in the future.

Figures expressing the lignite reserves of the state are not presented; they would be interesting and useful. Analyses of several Louisiana lignites yielded the following:

	Percentage
Moisture	5-47
Volatile combustible matter	30-75
Fixed carbon	5-40

The highest thermal value obtained was 8,046 B.T.U.'s. The analyses presented show Louisiana lignite to be of an intermediate grade. With destructive distillation the end products were:

	Percentage
Aqua ammonia	20 -30
Tar	4.5- 5
Carbonized residue	50 -56
Gas and loss	18 -20

The carbonized residue has a heating value equal to good anthracite; an average ton of lignite yields 8,000 cubic feet of gas (mainly hydrogen,